I-Chao Shen

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Research Interests

Computer graphics, vector graphics, data-driven 2D/3D geometry analysis and processing, machine learning.

Education

National Taiwan University — **Taipei, Taiwan**
Ph.D. in Computer Science — *Sep 2017 - Dec. 2020*
Advisor: Bing-Yu Chen.
Thesis: 2D Visual Content Design Driven by Human-Guided Optimization

National Taiwan University — **Taipei, Taiwan**
Master in Information Management and MBA — *Sep 2009 - June 2011*
Advisor: Bing-Yu Chen.
Thesis: Perspective-aware Warping for Seamless Stereoscopic Image Cloning

National Taiwan University — **Taipei, Taiwan**
Bachelor in Information Management — *Sep 2005 - June 2009*

Experiences

Assistant Professor, Tokyo, Japan — *Apr. 2023 -*
Dept. of Computer Science, The University of Tokyo

Project Assistant Professor, Tokyo, Japan — *Sep. 2022 - Mar. 2023*
Dept. of Creative Informatics, The University of Tokyo

Postdoctoral researcher - JSPS Foreign Researchers Fellowship, Tokyo, Japan — *Dec. 2020 - Aug. 2022*
Host : Takeo Igarashi

Research Visitor - JST CREST Project, Tokyo, Japan — *Feb 2018 - July 2018, Aug 2019*
Supervisor : Takeo Igarashi

Research Assistant - CMLab, National Taiwan University, Taipei, Taiwan — *Apr 2017 - July 2017*
Supervisor : Bing-Yu Chen

Research Assistant - Imager Lab, The University of British Columbia,
Vancouver, Canada — *Sep 2014 - Mar 2017*
Supervisor : Alla Sheffer

Research Intern - Imagination Lab, Adobe Research, San Jose, CA — *May 2015 - Aug 2015*
Supervisor : Nathan Carr, Duygu Ceylan, Zhaowen Wang

Research Assistant - CITI, Academia Sinica, Taipei, Taiwan — *Sep 2011 - July 2014*
Supervisor : Wen-Huang Cheng

Publications

FontCraft: Multimodal Font Design Using Interactive Bayesian Optimization
Yuki Tatsukawa, I-Chao Shen, Mustafa Doga Dogan, Anran Qi, Yuki Koyama, Ariel Shamir, Takeo Igarashi
CHI 2025

CompAct: Designing Interconnected Compliant Mechanisms with Active Material Integration
Humphrey Yang, I-Chao Shen, Nikolas Martelaro, Bo Zhu, Haoran Xie, Takeo Igarashi, Lining Yao
CHI 2025

Approximating Procedural Models of 3D Shapes with Neural Networks
Ishtiaque Hossain, I-Chao Shen, Oliver van Kaick
Eurographics 2025

FontCLIP: A Semantic Typography Visual-Language Model for Multilingual Font Applications
Yuki Tatsukawa, I-Chao Shen, Anran Qi, Yuki Koyama, Takeo Igarashi, Ariel Shamir
Eurographics 2024

Learned Inference of Annual Ring Pattern of Solid Wood
Maria Larsson*, Takashi Ijiri*, I-Chao Shen, Hironori Yoshida, Ariel Shamir, Takeo Igarashi (*: joint first authors)
Computer Graphics Forum 2024

Virtual Measurement Garment for Per-Garment Virtual Try-On
Zaiqiang Wu, Jingyuan Liu, Long Hin Toby Chong, I-Chao Shen, Takeo Igarashi
Graphics Interface 2024

Improving Cache Placement for Efficient Cache-based Rendering
Yu-Ting Wu, I-Chao Shen
The Visual Computer 2024

StylePart: Image-based Shape Part Manipulation
I-Chao Shen, Li-Wen Su, Yu-Ting Wu, Bing-Yu Chen
The Visual Computer 2024

NeRF-In: Free-Form NeRF Inpainting with RGB-D Priors
I-Chao Shen*, Hao-Kang Liu*, Bing-Yu Chen (*: joint first authors)
IEEE Computer Graphics and Applications (CG&A) 2023

Palette-Based and Harmony-Guided Colorization for Vector Icons
Miao Lin*, I-Chao Shen*, Hsiao-Yuan Chin, Ruo-Xi Chen, Bing-Yu Chen (*: joint first authors)
Computer Graphics Forum (Proceeding of Pacific Graphics 2023)

Data-guided Authoring of Procedural Models of Shapes
Ishtiaque Hossain, I-Chao Shen, Takeo Igarashi, Oliver van Kaick
Computer Graphics Forum (Proceeding of Pacific Graphics 2023)

EvIcon: Designing High-Usability Icon with Human-in-the-loop Exploration and IconCLIP
I-Chao Shen, Fu-Yin Cherng, Takeo Igarashi, Wen-Chieh Lin, Bing-Yu Cheng
Computer Graphics Forum Volume 42, Issue 6, September 2023

360MVSNet: Deep Multi-view Stereo Network with 360 ∘ Images for Indoor Scene Reconstruction
Ching-Ya Chiu, Yu-Ting Wu, I-Chao Shen, Yung-Yu Chuang
IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2023 (Algorithm Track)

ClipGen: A Deep Generative Model for Clipart Vectorization and Synthesis
I-Chao Shen, Bing-Yu Chen
IEEE Transactions on Visualization and Computer Graphics (TVCG), pp. 4211-4224, vol. 28, Dec. 2022

StyleFaceUV: a 3D Face UV Map Generator for View-Consistent Face Image Synthesis
Wei-Chieh Chung, Jian-Kai Zhu, I-Chao Shen, Yu-Ting Wu, Yung-Yu Chuang
The British Machine Vision Conference (BMVC) 2022

ODEN: Live Programming for Neural Network Architecture Editing
Chunqi Zhao, I-Chao Shen, Tsukasa Fukusato, Jun Kato, Takeo Igarashi
Proceeding of ACM Intelligent User Interfaces (IUI) 2022

Per Garment Capture and Synthesis for Real-time Virtual Try-on
Toby Chong, I-Chao Shen, Nobuyuki Umetani, Takeo Igarashi
Proceeding of User Interface Software and Technology (UIST) 2021

Data-driven Sketch Beautification with Neural Feature Representation
I-Chao Shen
IEEE Computer Graphics and Applications (CG&A) 2021

Multi-Resolution Shared Representative Filtering for Real-Time Depth Completion
Yu-Ting Wu, Tzu-Mao Li, I-Chao Shen, Hong-Shiang Lin, Yung-Yu Chuang
High-Performance Graphics (HPG) 2021

ClipFlip : Multi-view Clipart Design
I-Chao Shen, Kuan-Hung Liu, Li-Wen Su, Yu-Ting Wu, and Bing-Yu Chen
Computer Graphics Forum, Volume 40, Issue 1, Feb 2021, arXiv:2008.12933 [cs.GR]

Interactive Optimization of Generative Image Modeling using Sequential Subspace Search and Content-based Guidance
Toby Chong Long Hin*, I-Chao Shen*, Issei Sato, and Takeo Igarashi (*: joint first authors)
Computer Graphics Forum, Volume 40, Issue 1, Feb 2021, arXiv:1906.09840 [cs.GR]

ZomeFab: Cost-effective Hybrid Fabrication with Zometools
I-Chao Shen, Ming-Shiuan Chen, Chun-Kai Huang, and Bing-Yu Chen
Computer Graphics Forum, Volume 39, Issue 1, Feb 2020

Director-360: Introducing Camera Handling to 360 Cameras
Hao-Juan Huang, I-Chao Shen, and Liwei Chan
in proceeding of MobileHCI 2020

Perception-Driven Semi-Structured Boundary Vectorization
Shayan Hoshyari, Edoardo Dominici, Alla Sheffer, Nathan Carr, Duygu Ceylan, Zhaowen Wang, I-Chao Shen
ACM Transactions on Graphics (Proceedings of SIGGRAPH 2018).

High-resolution 360 Video Foveated Stitching for Real-time VR
Wei-Tse Lee*, Hsin-I Chen*, Ming-Shiuan Chen, I-Chao Shen and Bing-Yu Chen
Computer Graphics Forum (Proceedings of Pacific Graphics 2017)

A Scalable Active Framework for Region Annotation in 3D Shape Collections
Li Yi, Vladimir G. Kim, Duygu Ceylan, I-Chao Shen, Mengyan Yan, Hao Su, Cewu Lu, Qixing Huang, Alla Sheffer, and Leonidas Guibas
ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2016)

Retargeting 3D Objects and Scenes with a General Framework
Chun-Kai Huang, Yi-Ling Chen, I-Chao Shen, and Bing-Yu Chen
Computer Graphics Forum (Proceedings of Pacific Graphics 2016)

Data-driven Handwriting Synthesis in a Conjoined Manner
Hsin-Yi Chen, Tse-Ju Lin, I-Chao Shen, and Bing-Yu Chen
Computer Graphics Forum (Proceedings of Pacific Graphics 2015)

Gestalt Rule Feature Points
I-Chao Shen and Wen-Huang Cheng
IEEE Transactions on Multimedia (TMM), 17(4), pp. 526-537, 2015

Geometrically Consistent Stereoscopic Image Editing using Patch-based Synthesis
Sheng-Jie Luo, Ying-Tse Sun, I-Chao Shen, Bing-Yu Chen, and Yung-Yu Chuang
IEEE Transactions on Visualization and Computer Graphics (TVCG), 21(1), pp. 56-67, 2015

Stroke-guided Image Synthesis for Skeletal Structure Editing
Sheng-Jie Luo, Chin-Yu Lin, I-Chao Shen, and Bing-Yu Chen
Computer Graphics Forum (Proceedings of Pacific Graphics 2013)

Perspective-Aware Warping for Seamless Stereoscopic Image Cloning
Sheng-Jie Luo, I-Chao Shen, Bing-Yu Chen, Wen-Huang Cheng, and Yung-Yu Chuang
ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2012).

Technical Reports and Preprints

AutoSketch: VLM-assisted Style-Aware Vector Sketch Completion
Hsiao-Yuan Chin*, I-Chao Shen*, Yi-Ting Chiu, Bing-Yu Chen (*: joint first authors)
arxiv preprint (*arxiv:2502.06860*)

AvatarPerfect: User-Assisted 3D Gaussian Splatting Avatar Refinement with Automatic Pose Suggestion
Jotaro Sakamiya, I-Chao Shen, Jinsong Zhang, Mustafa Doga Dogan, Takeo Igarashi
arxiv preprint (*arxiv:2412.1560*)

AutoPoly: Predicting an Artist-Compatible Polygonal Mesh Construction Sequence from a Silhouette Image
I-Chao Shen, Yu Ju Chen, Oliver van Kaick, Takeo Igarashi
arxiv preprint (*arxiv:2203.15233*)

Workshop Papers, Short Papers, Posters

Designing Reconfigurable Joints
Atsushi Maruyama, Maria Larsson, I-Chao Shen, Takeo Igarashi
SIGGRAPH ASIA 2024 Technical Communication (Honorable Mention Award)

DualAvatar: Robust Gaussian Splatting Avatar with Dual Representation
Jinsong Zhang, I-Chao Shen, Jotaro Sakamiya, Yu-Kun Lai, Takeo Igarashi, Kun Li
SIGGRAPH ASIA 2024 Poster Program

Generating Font Variations Using Latent Space Trajectory
Sotaro Kanazawa, I-Chao Shen, Yuki Tatsukawa, Takeo Igarashi
SIGGRAPH ASIA 2024 Poster Program

3D Reconstruction from Sketch with Hidden Lines by Two-Branch Diffusion Model
Yuta Fukushima, Anran Qi, I-Chao Shen, Yulia Gryaditskaya, Takeo Igarashi
Eurographics 2024 Short Paper

MicroGlam: Microscopic Skin Image Dataset with Cosmetics
Toby Chong, Alina Chadwick, I-Chao Shen, Haoran Xie, Takeo Igarashi
SIGGRAPH ASIA 2023 Technical Communication

Computational Design of Nebuta-like Paper-on-Wire Artworks
Naoki Agata, Anran Qi, Yuta Noma, I-Chao Shen, Takeo Igarashi
SIGGRAPH 2023 Poster Program

Palette-Based Colorization for Vector Icons
Miao Lin, I-Chao Shen, Hsiao-Yuan Chin, Ruo-Xi Chen, Bing-Yu Chen
SIGGRAPH 2023 Poster Program

OVERPAINT: Automatic Multi-Layer Stencil Generation without Bridges
Yuta Fukushima, Anran Qi, I-Chao Shen, Takeo Igarashi
SIGGRAPH ASIA 2022 Technical Communication

Guided Image Weathering using Image-to-Image Translation
Li-Yu Chen, I-Chao Shen, and Bing-Yu Chen
SIGGRAPH ASIA 2021 Technical Communication

Real-time Image-based Virtual Try-on with Measurement Garment
Toby Chong, I-Chao Shen, Yunfei Qian, Nobuyuki Umetani, Takeo Igarashi
SIGGRAPH ASIA 2021 Emerging Technologies

Transferring Deep Reinforcement Learning with Adversarial Objective and Augmentation
I-Chao Shen, Shu-Hsuan Hsu, and Bing-Yu Chen
IJCAI-PRICAI 2020 Workshop on Knowledge-Based Reinforcement Learning (KBRL)

Large-scale fabrication with interior zometool structure
Ming-Shiuan Chen, I-Chao Shen, Chun-Kai Huang, and Bing-Yu Chen
ACM SIGGRAPH Poster Program 2018

A Deep Learning Based Method For 3D Human Pose Estimation From 2D Fisheye Images
Ching-Chun Chen, Chia-Min Wu, I-Chao Shen, and Bing-Yu Chen.
ACM IUI Poster Program 2018

Retargeting 3D objects and scenes
Chun-Kai Huang, Yi-Ling Chen, I-Chao Shen, and Bing-Yu Chen
ACM SIGGRAPH Poster Program 2015

Painting Photolization
Chien-Wen Jung, I-Chao Shen, Sheng-Jie Luo, Bing-Yu Chen, and Wen-Huang Cheng
ACM SIGGRAPH ASIA Poster Program 2013

Texturing and Deforming Meshes with Casual Images
I-Chao Shen, Yi-Hua Wang, Yu-Mei Chen, Bing-Yu Chen, and Wen-Huang Cheng
ACM SIGGRAPH ASIA Poster Program 2012

User-Assisted Disparity Maps
Hsin-Yi Chen, Yi-Shan Lin, I-Chao Shen, Sheng-Jie Luo, Wen-Huang Cheng and Bing-Yu Chen
Pacific Graphics 2012 short paper

MusicSpace: You "Play" The Music
Chun-Yu Tsai, Hung-Jung Lin, Tzu-Hao Kuo, Kai-Yin Cheng, I-Chao Shen Bing-Yu Chen, and Rung-Huei Liang
ACM SIGGRAPH Poster Program 2010

Patent

Smoothing images using machine learning
Nathan A Carr, Zhaowen Wang, Duygu Ceylan, I-Chao Shen
United States Patent, No. 9799102, issued October 24, 2017.

Grants

JSPS Kakenhi Grant-in-Aid for Young Scientists, Japan *2023 - 2028*

AIP Challenge Researcher, Japan Science and Technology Agency (JST), Japan. *2021 - 2022*

JSPS Grant-in-Aid for Scientific Research for JPSP foreign fellow, Japan. *2021 - 2023*

Honors

IPPR Best Ph.D. dissertation award, Honorable mention *2021*

JSPS Postdoctoral Fellowship for Foreign Researchers *2020 - 2022*

MediaTek Fellowship *2017 - 2020*

Invited Talks

Tailored Computational Visual Content Creation, *Mar. 2024*
ISID (International Symposium on Intelligence Design) 2024

Tailored Computational Visual Content Creation, *Feb. 2024*
BAI Research Seminar, Institute for AI and Beyond, The University of Tokyo

Computer Graphics around you everyday and how to become a Computer Graphics researcher, *July. 2022*
Chikushigaoka High School, Fukuoka, Japan

Computer Graphics around you everyday and how to become a Computer Graphics researcher, *July. 2022*
Tokyo Metropolitan Tama High School of Science and Technology, Tokyo, Japan
JSPS science dialogue program

Per Garment Capture and Synthesis for Real-time Virtual Try-on, *Sep. 2021*
JST CREST 8th Research Area Meeting

2D Visual Content Design Driven by Human-Guided Optimization, *Apr. 2021*
The University of Tokyo, Tokyo, Japan

Media

Per Garment Capture and Synthesis for Real-time Virtual Try-on *2021, 2022*
- BS フジ - ガリレオ X　第 259 回「現🄵空間 × 🄵想空間二つの世界を重ねる最新技術」(JP)
- JST News
- NIKKEI (JP)
- ZAIKEI (JP)
- TechCrunch Japan (JP)
- Tii 技術情報 (JP)
- Independent TV (UK)

Professional Services

- **Technical Paper Committee and others:**
  - SIGGRAPH ASIA Technical Papers Committee (2025)
  - Pacific Graphics International Program Committee (IPC) (2025)
  - Eurographics Short Papers International Program Committee (IPC) (2025)
  - SIGGRAPH Technical Papers COI Coordinator (2025) [link]
  - SIGGRAPH ASIA Technical Papers Committee (2024) [link]
  - AAAI (2023 [link], 2024 [link], 2025 [link])
- **Reviewer:**
  - SIGGRAPH, SIGGRAPH ASIA
  - NeurIPS, ICLR, ICML
  - Eurographics
  - CHI
  - Pacific Graphics
  - WACV
  - BMVC
  - Transaction on Multimedia (TMM)
  - Transaction on Visualization and Computer Graphics (TVCG)

References

Takeo Igarashi
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Bing-Yu Chen
Professor in Department of Computer Science and Engineering / Information Management, National Taiwan University
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Email: cyy@csie.ntu.edu.tw